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A49.9  
R317 RESERVE



*A plan for every size herd*

OFFICIAL DHI

OWNER SAMPLER

WEIGH-A-DAY-A-MONTH

AGRICULTURAL RESEARCH SERVICE, U. S. DEPARTMENT OF AGRICULTURE

Dairy-Herd-Improvement Letter

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EDITING OF LACTATION RECORDS USED IN USDA-DHIA  
GENETIC EVALUATIONS OF SIRES AND COWS 1/ 2/

Lactation records of cows enrolled in Official DHI, including DHIR, recordkeeping programs are eligible for use in USDA-DHIA genetic evaluations. Those records submitted to USDA are edited extensively to insure the accuracy, integrity and consistency of lactation data and of the genetic evaluations of cows and sires for which the data are used. To obtain unbiased genetic evaluations of dairy animals, proper age adjustments of records must be made; the correct number of available daughters and records must be used; cows must be identified correctly by sire; and a cow's records must be matched with the appropriate herdmates' records. All these things can be done only when each lactation record is identified accurately.

Records failing the edits are not used in genetic evaluations. Although records of grade cows with sire numbers

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that are all zeros are not used as individual records of daughters of particular bulls or as their herd mates, they are included in the system for use in the State and national breed averages. In 1969, of the 1,870,276 lactation records submitted to USDA, the following numbers of records were rejected:

<u>Edit and reason for rejection</u>	<u>Number</u>	<u>Percent of records submitted</u>
Preliminary edit-- identification number all zeros for sires of grade cows-----	802,079	42.89
Preliminary edit-- other invalid entries-----	13,279	.71
Main edit-- conflicts with another record-----	<u>54,546</u>	<u>2.92</u>
Total-----	869,904	46.52

For the May 1970 run alone, 589,277 lactation records were submitted, and rejects were as follows:

<u>Edit and reason for rejection</u>	<u>Number</u>	<u>Percent of records submitted</u>
Preliminary edit-- identification number all zeros for sires of grade cows-----	244,934	41.57
Preliminary edit-- other invalid entries-----	2,992	.51
Main edit-- conflicts with another record-----	<u>15,230</u>	<u>2.58</u>
Total-----	263,156	44.66

## Types and Frequencies of "Error" Conditions

The types and frequencies of error or reject conditions noted in 1969 editing are shown in table 1. Missing identification numbers for sires of grade cows led the list with 802,079; next in order was conflicting or questionable birth dates--appearing 17,188 times. The number of registered cows rejected because the missing dam or sire identification number was all zeros dropped from 6,548 in 1968 to 4,086 in 1969. The condition "Cow and dam breed unequal" in registered cows was more prevalent (3,131) in 1969 than in 1968 (1,868).

The inclusion of blanks in the record and alphabetics in the two high-order positions of the sire number rose markedly in 1969.

Care in identifying and reporting all animals in each herd will greatly reduce the records rejected and the work needed to correct such errors.

Table 2 gives the frequency of the various error conditions encountered in the May 1970 sire summary run.

You will note that tables 1 and 2 show error conditions rather than numbers of records in error. Records are edited for all remaining fields after the first conflict is found. Many records continue to contain more than one error. This is reflected in the fact that the number of error conditions in table 1 are more than the records shown on page 2 as rejected.

## Importance of Complete and Accurate Records

The conditions that cause records to be rejected are explained in detail, beginning on page 15. Understanding why records are rejected may encourage dairymen, DHI supervisors, and others involved in the National Dairy Herd Improvement Program to provide more complete and accurate production records. This will make their own records more valuable and



help to get more accurate genetic evaluations. Some processing centers are listing sire and dam identification on the monthly barn sheet so that these can be easily checked and corrected if necessary. In any event, a dairyman can check through his record book to insure correct reporting of cow, sire, and dam identification (including their respective breeds), correct birth and calving dates for the cow, and correct milk and fat production figures. Checking at the farm at the time the cow calves, during the lactation, and possibly when the lactation record is completed is less expensive and less frustrating than having to trace an error just at the time a record is needed for management, sale, or other purpose.

The information included in an Official DHI record submitted to USDA is shown in the formats on pages 9 and 10. Please note that there are positions available to code situations which, although not standard, have been validated as being correct, so that the lactations will not be rejected by USDA edits. More detailed information concerning record handling is given to dairy records processing centers.

### Steps in Editing Records

The first step in editing records for sire and cow evaluation is the requirement that the records used be those of cows on Official DHI test. The USDA then edits the records for completeness and for consistency of information. Both preliminary and main edits are done on a computer. The preliminary edit eliminates records with error conditions that do not depend on comparison with other records for detection. These conditions are:

1. Missing data.
2. Blanks or invalid characters in any field of the record.
3. Alphabetic characters in fields that should be numeric.
4. More than 305 or less than 7 days in milk.
5. All zeros in month, day, or year of the calving date.
6. All zeros as number for sire, dam, or breed of registered cow.

7. All zeros as number or breed for registered cow.
8. Breed code "8" for a registered cow (unless "08" appears as the animal prefix code.
9. An eartag number for the sire of a registered cow.
10. Unequal breeds for a registered cow and her dam.
11. Unequal breeds for a registered cow and her sire.
12. All zeros as number for sire of grade cow. (These records are used for national breed and State breed averages.)
13. Unequal breed for grade cow and her sire if the cow is not coded as a crossbred, breed code "8," (unless the breed of cow is "1," "2," or "5," and the animal prefix code is "36" or "37" denoting identity enrollment status).
14. Grade cow coded as breed "8," but sire and dam's breed are equal and not breed "8." (Same exceptions as for 13.)
15. Grade cow has sire with breed "0."

A grade cow's record will not be rejected if the cow's dam's number is all zeros.

The main edit drops records that conflict in some way with other records in the master file or data in the herdbook of the dairy cattle registry organizations. Checks that are made in the main edit are:

1. Questionable calving date.
2. Conflicting data for the same calving date, or duplicate milk and fat yields for two different calving dates.
3. Less than 9-month interval between calving dates for two records of the same cow.
4. Production (milk, fat, or percent fat) out of range for breed and age.
5. Identification of registered cows is compared with herdbook data when they are available. Discrepancies in two or more fields (sire, dam, or birth date) between an individual record and the herdbook will cause the record to be rejected.
6. Registration numbers are checked for ranges depending on breed and age of cow when herdbook data is not available.

7. All remaining cows are compared against previously reported identification data.
  - (a) Discrepancies between previously reported identification and current data cause both to be rejected unless they can be adjusted under provisions 7(b) or 7(c).
  - (b) If the discrepancy is day of birth, the day of birth from the master record is put in the current record, and both are kept.
  - (c) If either the current or master is a verified record, it is kept. If only one of the identification fields conflict, information from the verified record is transferred to the other, and both records are kept.
8. Cows with the same dam are checked for at least a 9-month interval between birth dates, and those with a shorter interval are rejected unless coded as twins. Uncoded twins are rejected in this category.

Automatic interval adjustment and reconciliation of inconsistencies is done by USDA in certain areas as follows:

1. Reconciliation of identification on grade cows is practiced when the conflicts arise from a "Z" vs. a zero, or "000" (alphabetic) vs. zeros in the three high-order positions of the number. All digits involved are converted to zeros for storage in master files.
2. One discrepancy between current identification and either herdbook or previously verified data are adjusted automatically.
3. When conflicts arise between the dam number of two records of the same grade cow, both are converted to zeros if the sire and birth dates are identical and non-zero.
4. When a current record contains an identification correction code, the sire, dam, and birth date from the current record are placed in all previous records for that cow in USDA master files.



## Disposition of Records With Error Conditions

Figure 1 on page 28 is a Form 1060 showing records with various error conditions in print format as they are coded by USDA. The error tapes in print format are sent to the processing centers after each sire summary run. Each record is marked with error codes to explain the reason for rejection. As many as four codes can be listed.

### How to Correct a Lactation Record

It is possible to have a lactation record corrected for future use in sire and cow evaluation. The simplest and most effective procedure for correcting a lactation record calls for: (1) submitting a deletion record card for each incorrect lactation record (the deletion record format and instructions for use are shown as figures 2 and 3 on p. 29 and 30); and (2) submitting the correct lactation record—preferably on tape—in the lactation record tape format (p.9) or on a card in the lactation record card format (p.10).

To delete a single record, the deletion-record data must be submitted in every detail exactly as the originally reported lactation record; i.e., the same cow, sire, and dam numbers, the same breed of each animal, the same birth date, and the same calving date. When more than one record for a cow is in error, all records may be dropped by using "999999" in the calving date positions.

Corrected lactation records must carry either an identification correction code or a production correction code (depending on the type of error) in positions 31 or 87, respectively, in the lactation record tape format (p.9) or in positions 31 or 75, respectively, in the lactation record card format (p.10).

USDA prefers to receive corrected records on tape through the dairy records processing centers. A dairyman,

DHIA supervisor, or extension agent wishing to correct a record should send both original, incorrect data and correct data to his processing center. The center can accumulate these records and send them to USDA for the appropriate sire summary run.

The following format for lactation record tapes was adopted at the 1966 National DHIA Computing Center Workshop and replaces all previous lactation record tape formats.

<u>Position</u>	<u>Fields</u> <sup>a/</sup>
1	Breed of cow
2 - 10	Cow number (registration or eartag)
11	Breed of sire
12 - 20	Sire number (registration or eartag)
21	Breed of dam
22 - 30	Dam number (registration or eartag)
31	Identification code (correction or verification) <sup>b/</sup>
32 - 37	Year, month, and day of birth
38 - 43	Year, month, and day of calving
44 - 46	Days dry prior to this lactation <sup>a/c/</sup>
47 - 49	Current days carried calf <sup>a/</sup>
50 - 51	Days 3x (nearest 10) <sup>a/</sup>
52 - 54	Days in milk
55 - 58	Milk (nearest 10 lb.)
59 - 62	Fat (lb.)
63	Termination code (replaces old C.A.R. code) <sup>e/</sup>
64 - 66	Body weight (nearest 10 lb.) <sup>a/</sup>
67 - 69	Concentrates (grain) fed (nearest 10 therms) <sup>a/</sup>
70 - 73	Solids-not-fat (lb.) <sup>a/</sup>
74 - 77	Protein (lb.) <sup>a/</sup>
78	Type-of-testing code <sup>i/</sup>
79 - 80	State code
81 - 82	County or association code
83 - 86	Herd code
87	Production correction code <sup>i/</sup>
88 - 89	Lactation number <sup>a/</sup>
90 - 93	Cow control (index) number
94 - 98	Zero
99 -100	Processing center code

The following format for lactation record cards was adopted at the 1966 National DHIA Computing Center Workshop and replaces all previous lactation record card formats.

<u>Column</u>	<u>Fields</u> <sup>a/</sup>
1	Breed of cow
2 - 10	Cow number (registration or eartag)
11	Breed of sire
12 - 20	Sire number (registration or eartag)
21	Breed of dam
22 - 30	Dam number (registration or eartag)
31	Identification code (correction or verification) <sup>b/</sup>
32 - 37	Year, month, and day of birth
38 - 43	Year, month, and day of calving
44	Days dry prior to this lactation (nearest 10) <sup>a/d/</sup>
45	Current days carried calf (nearest 10) <sup>a/d/</sup>
46	Days 3x (nearest 10) <sup>a/d/</sup>
47 - 49	Days in milk
50 - 53	Milk (nearest 10 lb.)
54 - 57	Fat (lb.)
58	Termination code (replaces old C.A.R. code) <sup>e/</sup>
59 - 60	Body weight (nearest 10 lb.) <sup>a/f/</sup>
61 - 62	Concentrates (grain) fed (nearest 100 therms) <sup>a/</sup>
63 - 65	Solids-not-fat or protein (lb.) <sup>a/g/h/</sup>
66	Type-of-testing code <sup>i/</sup>
67 - 68	State code
69 - 70	County or association code
71 - 74	Herd code
75	Production correction code <sup>i/</sup>
76	Lactation number <sup>a/k/</sup>
77 - 80	Cow control (index) number



## Footnotes for Lactation Record Tape and Card Formats

- a/ When information is not available, field must be filled with zeros rather than left blank. Use zeros also for records where only part of the concentrates fed was available.
- b/ Codes for correction or verification of identification (identification is defined as cow number, sire and dam numbers, breed codes, and birth date):

<u>Code</u>	<u>Definition</u>
0	No correction or verification.
1	Identification in the record replaces any previously reported information for this cow (correction code). <u>Note</u> : This does not apply to a correction of cow number. This must be reported by direct correspondence between USDA and State Extension Dairymen or Processing Centers and on a special format card.
2	Identification is correct although somewhat unusual (verification code).
3	Cow is a twin (or triplet, etc.)
4	Cow has been previously reported under a different, but unknown eartag number (i.e., the cow has been retagged).
5	Grade cow not born in current herd; birth date estimated.
6	Combination of codes 1 and 3.
7	Combination of codes 2 and 3.

- c/ No zone code will be shown in position 44. In the previous tape format, a "high" punch in position 44 was used to indicate the format type.
- d/ Use "high" or "zone" punch in the high-order position of the field in addition to "tens" numeral when days equal or exceed 100 in the following manner:
  - (1) "11" punch if 100 - 190 days
  - (2) "12" punch if 200 or more daysDo not distinguish among values exceeding 290 days.

For example the following number of days should be coded as follows:

<u>Original number of days</u>	<u>Coded value</u>
54	5
55	6
98	$\overline{0}$
150	$\overline{5}$
220	$\overline{+2}$
290	$\overline{+9}$
320	$\overline{+9}$
500	$\overline{+9}$

e/ Termination codes (replace old C.A.R. codes):

<u>Code</u>	<u>Definition</u>
0	Normal lactation terminated by dry date or 305 days in lactation when cow is still in the herd.
1	Incomplete terminated record of at least one valid test followed by two or more consecutive missed tests or a period of more than 75 days between consecutive tests, but the cow remains in the herd. The record up to the missed test to be coded "1" and sent to USDA--project to 305 days. <u>Note:</u> The complete record of 305 days or less for a lactation that was terminated due to two consecutive missed tests or to having consecutive tests more than 75 days apart should be coded "9" and sent to USDA also. Some valid reasons for missed tests

- are (1) broken, spilled, or accidentally missed samples; (2) cow goes on show circuit during lactation.
- 2 Sold for dairy purposes--project to 305 days.
  - 3\* Sold because of low production--project to 305 days.
  - 4\* Sold because of reproductive problems--project to 305 days.
  - 5\* Sold because of disease, injury or unspecified reasons--project to 305 days.
  - 6\* Died--project to 305 days.
  - 7\* Sold because of mastitis or other udder problem--project to 305 days.
  - 8 Record ended by an abortion--project to 305 days.
  - 9 Record not to be used for sire or cow evaluation. Note: Lactation initiated by abortion; complete record with two or more consecutive months missing where valid portion of record has previously been submitted to USDA as code 1; a record for which any two consecutive tests were more than 75 days apart; no test within 78 days of calving. (The number of days is changed from 60 in accordance with the Official DHI Rules, Revised and Accepted by the Coordinating Group, July 1969.)

\*Centers unable to use codes 3 through 7 in the manner shown should code all these categories as code 3.

f/ Punch the high order 2 digits if body weight (bwt.) in 10's equals 3 digits. (e.g., 854 lb. = 85)

Use "high" or "zone" punch in the high-order position of the field in addition to the appropriate 2 digits if bwt. exceeds 994 as follows:

- (1) "11" punch if 995 - 1,994 lb.
  - (e.g., 995 lb. =  $\overline{00}$
  - 1,000 lb. =  $\overline{00}$
  - 1,290 lb. =  $\overline{29}$
  - 1,994 lb. =  $\overline{99}$

- (2) "12" punch if 1,995 lb. or more  
(e.g., 2,000 lb. =  $\overset{+}{00}$ )

g/ Use "high" or "zone" punch in the high-order position of the field in addition to low order digit, if field exceeds 999 as follows:

- (1) "11" punch if 1,000 – 1,999 lb.  
(e.g., 1,501 lb. =  $\overset{+}{501}$ )  
(2) "12" punch if 2,000 lb. or more solids-not-fat  
only (e.g., 2,110 lb. =  $\overset{+}{110}$ )

h/ Use "11" punch in column 65 when protein reported.

i/ "Type-of-testing" codes:

<u>Code</u>	<u>Definition</u>
0	Official DHI
1	Official DHIR
2	Bimonthly (unofficial)
3	Alternate AM/PM (unofficial)
4	Goats (Official DHI and DHIR, but not to be included with cattle records)
5	Other unofficial plans
6	Vo-Ag, FFA (unofficial)
7	O-S (unofficial)
$\overline{7}$	O-S, alternate AM/PM (unofficial)
8	WADAM (unofficial)
9	Trimonthly (unofficial)

j/ Production correction or verification codes:

<u>Code</u>	<u>Definition</u>
0	No correction or verification
1	Lactation data replace that previously reported for this cow and calving date (correction code).
2	Production data are correct, although unusual for breed and age (i.e., fat percent is unusually high or low, etc.)(verification code).

k/ Use "11" punch in column 76 if field exceeds 9.



## Error Code Explanation

Relative frequency of the error conditions for 1969 are given in table 1 on page 31. The frequencies for the May 1970 sire summary run are given in table 2 on page 32. The following are the error codes with an explanation of each code:

### A-type errors--conflicts with herdbook data from breed organizations or with other lactation records.

- A1 Two or more identification fields (sire, dam, birth date) in this record conflicted with the herdbook of the respective breed registry organization. Note: For cases where only one field (sire, dam, or birth date) in a lactation record conflicts with the herdbook, the lactation record is changed to conform with the herdbook. Records that can be adjusted in this manner are not rejected.
- A2 The record in question has been rejected because identification in it disagrees with identification previously verified as being correct by State Extension Dairymen or USDA.
- A3 This condition is the same as A2 except that the verification was supplied by a DHI Computing Center.
- A4 This error involves a conflict between the identification data (sire, dam, birth date) on two lactation records of a cow, where both lactation records have been previously verified by different sources as being correct. Note: Identification is considered verified when a "2" is reported in position 31 of the lactation tape record. Production is considered verified when a "2" is reported in position 87 of the tape record.
- A5 Identification data on two or more lactation records of a cow conflicted. Note: In neither record was the data verified or marked with a correction code. Also included are conflictions between an incoming record and previously reported records in USDA master files.

This is one of the most frequent errors USDA encounters. Many times the error is really in cow number. What appears to be two conflicting records of one cow really should be records on two different cows.

B-type errors—questionable or invalid birth date.

- B1 The year of birth in the record is higher than the year in which the record was received by USDA.
- B2 The month of birth is either zero or greater than 12.
- B3 The day of birth is either zero or greater than 31 for a registered cow.
- B4 There is less than a 9-month interval between birth dates of two daughters of the same cow.

Note: This error quite often involves cows which are actually twins, but where the twin code was not shown in the lactation record as it was reported from the computing center. Records of twins that are coded with a "3" in position 31 of the lactation record will not be rejected by this edit step.

Another common situation is that one of the dam numbers is wrong. This condition usually applies only to grade animals since the authenticity of registered information is checked against the herdbook data when they are available.

C-type errors—questionable or invalid cow identification number.

- C1 This cow's registration number is out of range for the breed reported. Note: Each cow registration number is automatically checked against a high and low number appropriate to the breed involved. The low number is chosen sufficiently small to screen out only the most obvious reporting errors. The high number is normally the highest one issued by the breed to the present date. USDA experience has indicated that in many cases the real problem involved is that the breed

codes listed for the cow are incorrect. This check was included to avoid putting registered cows in the wrong breed.

- C2 This cow's record has an invalid "new series" eartag number. Note: For all cows born on or after January 1, 1957, the eartag number must include nine positions with only numerals in the four low-order positions. The prefix code is in the two high-order positions and any alphabetics must be in the three remaining positions.
- C3 This cow's record has an invalid "old series" eartag. Note: Several eartag variations were used for cows prior to 1957. However, certain conditions were not permissible. Only very old cows will be involved.
- C4 This registered Brown Swiss or Red Poll cow is coded as a foreign animal ("01" in high-order positions of cow registration number). Note: There are no Canadian registry associations for these breeds, and no importations from other countries are allowed at present.
- C5 This cow has an invalid American Dairy Cattle Club registration number

D-type errors-questionable or invalid dam number

- D1 The dam number is out of the permissible range as a registration number for the breed reported. Note: Each registered dam identification number is compared against high and low numbers appropriate to the breed involved. Among those rejected in this category are numeric private dam numbers of grade cows, which are usually only one to four positions in length. This happens because there are no alphabetics in the number, therefore, the computer program considers and compares it as a registration number. (All eartags must have alphabetics in them.)

Also rejected in this category are eartag numbers that do not have a valid prefix code in the two high-order positions. This is one of the major problems in reporting dam numbers.

- D2 This registered cow's record was reported with either a zero or grade dam number.
- D3 The registration number of the dam is higher than the cow's registration number and there is no verification code present in the record. Note: In a very few cases this is a valid situation. However, these must be identified with a verification code ("2") in position 31 of the lactation record.
- D4 The eartag number of the dam is invalid. See C2 and C3.
- D5 This registered Brown Swiss or Red Poll cow has a dam coded as a foreign registration number. See C4.
- D6 This registered Milking Shorthorn cow has an invalid dam registration number.
- D7 The dam has an invalid American Dairy Cattle Club registration number.

E-type errors-questionable or invalid breed code designation

- E1 This registered cow's breed does not agree with that of her sire or dam. This applies only if the cow's breed is not a "1," "2," or "5" followed by a "36" or "37" as the animal prefix code.
- E2 This registered cow, sire, or dam has been designated breed "8," which is the designation for crossbreds or unknown breed. This does not apply when the cow has been coded breed "1," "2," or "5" with "36" or "37" as the animal prefix code. Note: If there is an "08" as the animal prefix code, a record is not rejected. This coding is used to identify registered cows of the Red and White breed.
- E3 The sire or dam identification number has been reported with a zero breed code. Note: A record cannot be used by USDA unless there are valid breed codes for the identification data reported.

F-type errors-questionable or invalid calving date

- F1 The calving date recorded is later than the date



- the record was received by USDA.
- F2 The month of calving was coded as zero or greater than 12.
- F3 The day of calving (registered cows only) had been coded zero, or the day of calving has been coded as greater than 31 (for any cow).
- F4 The age at calving calculated from the reported calving and birth dates is less than 14 months.  
Note: It is possible that the error involved in this record is the birth date. If the record is valid it should be marked with a verification code ("2" in position 31).
- F5 Two records of a cow have been reported with calving dates that are less than 9 months apart.  
Note: In many of these the real problem is in some other area besides calving date. In many the real error is that two cows have been reported with the same eartag or registration number. Another segment of the errors that fall in this class result from a record that was started with an abortion, but was reported without the proper termination code. Also, the previous record was not reported as being terminated by an abortion. Thus, the calving dates may be correct, but there is still something wrong with these records.
- F6 Two records for a cow have been reported with identical calving dates but with different amounts of milk or fat. Note: One apparent source of this error is the reporting of corrected production data without a production correction code of "1" in position 87 of the lactation record. We have also found that many of the differences in production are quite minor. This would appear to be minor systems problems in the dairy records processing centers caused by a second 305-day record at some later date.

However, there is only one production amount that is proper for a lactation of a given cow. Thus, USDA will not use any conflicting records on production until the correct one is identified.

- F7 Two lactations of a cow have equal production but different calving dates. Note: It is possible that these lactation records are correct, but our studies indicate that in most cases something is wrong. If the records are correct, verify both records "2" in position 87 and return to USDA.
- F8 The calving date plus the days in milk extends past the date the record was received by USDA.
- F9 More than 20 lactation records have been reported for this cow. Note: This might be possible, but all situations found so far by USDA have included some type of error. This may be in any area but most likely there is more than one cow involved, and one is improperly coded.

G-type errors--questionable or invalid prefix code in an eartag identification number

- G1 The eartag number of the cow contains an illegal prefix code.
- G2 The sire's eartag number contains an illegal prefix code.
- G3 The dam's eartag number contains an illegal prefix code.

Valid prefix codes are in several categories:

For registered animals, they are:

- 00 = Animal registered in primary American herd-book for each breed.
- 01 = Canadian or Channel Islands registration numbers.
- 08 = "Red and White" cattle.
- 17 = Goats (registered or eartag)
- 30 = Red and White Holsteins registered with the Holstein-Friesian Association of America.
- 36 = Cows in an identity enrollment program whose offspring are not eligible for inclusion in the regular herdbook.
- 37 = Cows in an identity enrollment program whose offspring are eligible for inclusion in the herdbook (if they meet requirements).

99 = American Dairy Cattle registrations.

For grade animals, they are:

02 = Canadian Eartag	55 = North Carolina
11 = Maine	56 = South Carolina
12 = New Hampshire	57 = Georgia
13 = Vermont	58 = Florida
14 = Massachusetts	61 = Kentucky
15 = Rhode Island	63 = Tennessee
16 = Connecticut	64 = Alabama
21 = New York	65 = Mississippi
22 = New Jersey	71 = Arkansas
23 = Pennsylvania	72 = Louisiana
31 = Ohio	73 = Oklahoma
32 = Indiana	74 = Texas
33 = Illinois	81 = Montana
34 = Michigan	82 = Idaho
35 = Wisconsin	83 = Wyoming
41 = Minnesota	84 = Colorado
42 = Iowa	85 = New Mexico
43 = Missouri	86 = Arizona
45 = North Dakota	87 = Utah
46 = South Dakota	88 = Nevada
47 = Nebraska	91 = Washington
48 = Kansas	92 = Oregon
50 = Delaware	93 = California
51 = Maryland	94 = Puerto Rico
52 = Virginia	95 = Hawaii
54 = West Virginia	96 = Alaska

For foreign animals other than Canadian or Channel Island (registered or grades), they are:

09 = El Salvador	67 = Costa Rica
24 = Argentina	69 = Guatemala,
25 = Brazil	Honduras,
27 = Bolivia,	Nicaragua, and
Paraguay	Panama

28 = Chile  
29 = Uruguay  
59 = Caribbean Islands  
66 = Mexico

75 = Colombia  
76 = Ecuador  
77 = Peru  
78 = Venezuela  
79 = Guyana

I-type errors-non-numeric characters in numeric fields of the record. These errors usually originate in computing centers.

- I1 One or more registration numbers in the pedigree contains blank or alphabetic characters.
- I2 The cow's birth date contains blank or alphabetic characters.
- I3 The lactation information (including the herd code) contains blank or alphabetic characters.

J-type errors-the same identification number appears for two or more animals in the pedigree

- J Cow and sire numbers equal, cow and dam numbers equal, or sire and dam numbers equal.

L-type errors-days milked three times a day exceeds total days in milk reported.

- L Days milked three times a day exceeds total days in milk reported.



M-type errors-questionable milk production

M1 The 2x-305-day-ME milk production in each record is checked against high and low limits for each breed. If the production falls outside this range, the record is rejected. The appropriate breed limits which are about 10 percent above the existing breed class leaders on the high end, are listed as follows:

		Milk		
		Low		High
Breed		2-yr	36 months or older	
<u>Code</u>	<u>Name</u>	<u>Lb.</u>	<u>Lb.</u>	<u>Lb.</u>
1	Ayrshire	1,500	3,000	34,100
2	Guernsey	1,500	2,400	29,700
3	Holstein	2,000	4,600	42,900
4	Jersey	1,500	2,400	27,500
5	Brown Swiss	1,500	3,000	24,100
6	M.Shorthorn	1,500	2,400	33,000
7	Red Dane	1,500	3,000	33,000
8	Mixed Breed	1,500	2,400	41,250
9	Red Poll	1,500	2,400	33,000

M2 The actual milk production, on a pounds-per-day-milked basis, is checked against high and low limits for each breed as follows:

Breed		Milk			
		2-yr		36 months or older	
		Low	High	Low	High
<u>Code</u>	<u>Name</u>	<u>Lb.</u>	<u>Lb.</u>	<u>Lb.</u>	<u>Lb.</u>
1	Ayrshire	5	87	10	121
2	Guernsey	5	87	8	110
3	Holstein	10	110	15	160
4	Jersey	5	83	8	105
5	Brown Swiss	5	88	10	121
6	M.Shorthorn	5	77	8	118
7	Red Dane	5	77	10	118
8	Mixed Breed	5	106	8	149
9	Red Poll	5	77	8	118

M3 The milk production value was not reported.

N-type errors—number of days milked was less than 7 or more than 305

N Number of days milked was less than 7 or more than 305.

0-type errors-questionable fat production

- 01 The fat production reported (2x-305-day-ME) is outside the acceptable range for the breed as listed in the following tabulation:

		Fat		
		Low		High
		2-yr	36 months or older	
<u>Code</u>	<u>Name</u>	<u>Lb.</u>	<u>Lb.</u>	<u>Lb.</u>
1	Ayrshire	61	91	1,485
2	Guernsey	61	91	1,320
3	Holstein	91	122	1,980
4	Jersey	61	91	1,540
5	Brown Swiss	61	91	1,650
6	M. Shorthorn	61	91	1,595
7	Red Dane	61	91	1,595
8	Mixed Breed	61	91	1,870
9	Red Poll	61	91	1,595

- 02 The actual fat production, on a pounds-per-day-milked basis, is checked against high and low limits for each breed as follows:

		Fat			
		2-yr		36 months or older	
Breed		Low	High	Low	High
<u>Code</u>	<u>Name</u>	<u>Lb.</u>	<u>Lb.</u>	<u>Lb.</u>	<u>Lb.</u>
1	Ayrshire	0.2	3.5	0.3	5.3
2	Guernsey	.2	3.9	.3	5.5
3	Holstein	.3	4.3	.4	6.8
4	Jersey	.2	4.0	.3	5.5
5	Brown Swiss	.2	3.5	.3	5.8
6	M. Shorthorn	.2	3.3	.3	5.8
7	Red Dane	.2	3.3	.3	5.8
8	Mixed Breed	.2	4.3	.3	6.8
9	Red Poll	.2	3.3	.3	5.8

03 The fat production value was not reported.

P-type errors-questionable or invalid fat percent.

Fat percent for editing purposes is computed from actual reported milk and fat yields.

- P1 This unverified incomplete record has a fat percent less than 2.4% or greater than 7.3%.
- P2 The unverified fat percent for a complete record for a cow identified by breed is out of the acceptable range as follows:

Breed		Percent Fat	
		Low	High
<u>Code</u>	<u>Name</u>	<u>Pct.</u>	<u>Pct.</u>
1	Ayrshire	2.8	6.0
2	Guernsey	3.4	6.7
3	Holstein	2.4	5.5
4	Jersey	3.4	7.3
5	Brown Swiss	2.8	6.0
6	M. Shorthorn	2.8	5.9
7	Red Dane	2.8	6.0
8	Mixed Breed	2.4	7.3
9	Red Poll	3.0	6.0

Records with a production verification code or incomplete records of all breeds are checked against the following limits:

	Low	High
	<u>limit</u>	<u>limit</u>
Production verification code "2"		
in column 87 -----	2.0	9.9
Incomplete records of all breeds -----	2.4	7.3

Note: Many fat percentages outside of the ranges listed above will not be rejected if they have a production verification code in the lactation record as it is submitted. We realize that some of the records that are rejected under the "P" category are valid records.



S-type errors-questionable or invalid sire identification number. The sire identification number error represents one of the major categories of errors that we find.

- S1 The registration number of the sire is out of range for the breed involved. Note: This usually involves an invalid number of some type. Digits are missing or an improper eartag number was used. For instance, the prefix code may be left off of an eartag number.
- S2 This registered cow has been reported with an eartag sire number.
- S3 The eartag number of the sire of a grade cow is invalid. See C2 and C3.
- S4 This registered Brown Swiss or Red Poll sire has been coded with a foreign designation. See C4.
- S5 This registered Milking Shorthorn sire number is invalid.
- S6 This registered American Dairy Cattle Club sire number is invalid.

ERRATUM: In the Dairy-Herd-Improvement Letter, ARS 44-221, August-November 1970, on page 9, table I-2, the last line caption in the stub should read Total records projected.

DHI COPY OF STATE ERROR LIST DATE 69-09

HERD CODE	COW NUMBER	SIRE NUMBER	DAM NUMBER	DATE OF BIRTH	DATE FRESH	NUMBER DAYS	MILK 10 LB.	% TEST	FAT LB.	L. B. P.	BD. P.	ERROR CODES	MISC. CODES
47029007	006187757	3	001443590	3	08 26 64	12 02 67	00 06 00	142	0467	3.2	0149	C 000	
47029007	006823536	3	010273711	3	07 16 65	06 01 68	00 23 00	305	1313	3.5	0460	0 117	84
47130008													01
47130008	005949671	3	001426368	3	07 01 63	05 06 68	03 06 00	305	0855	3.8	0329	0 150	F6
47610049	005949671	3	001426368	3	07 01 63	05 06 68	03 06 00	305	0856	3.9	0330	0 150	F6
47200068													
47200068	005653014	3	001371358	3	08 02 62	09 26 68	07 10 00	182	0642	3.7	0236	C 150	01
47200068	006007391	3	001395429	3	06 22 63	09 17 68	07 03 00	191	0226		0086	C 150	01 M2
47209009													
47209009	000481570	5	000122548	5	06 08 65								
47209009	000481570	5	000122548	5	10 21 64	06 09 68	03 06 00	108	0504	4.1	0208	B 140	A5
47210008													
47210008	000440614	5	000134102	5	04 22 62	07 23 68	00 10 00	305	0844	4.0	0336	0 000	B4
47210008	000443175	5	000134102	5	07 05 62	06 26 68	00 00 00	305	0834	3.5	0294	0 000	B4
47270032													
47270032	002320726	2	000527578	2	09 19 63	08 11 68	00 22 00	300	0761	6.1	0468	0 000	B4
47270032	002320727	2	000527578	2	09 19 63	12 21 67	00 00 00	305	0927	5.3	0495	0 000	B4
47280105													
47280105	006297967	3	001235750	3	01 05 65	09 30 67	00 00 00	144	0302	3.7	0111	0 000	F5
47280105	006297967	3	001235750	3	01 05 65	05 10 68	00 11 00	305	1388	3.4	0472	0 000	F5
47280105	006382928	3	001244845	3	05 16 65	05 08 68	00 00 00	305	1780	3.5	0623	0 130	F6
35140105	006382928	3	001244845	3	05 16 65	05 05 68	00 00 00	305	1755	3.5	0606	0 000	F6
47289058													
47289058	006272149	3	001287090	3	01 05 65	09 17 67	00 21 00	305	1228	3.9	0484	0 000	B4
47289058	006272150	3	001287090	3	01 05 65	06 01 68	00 06 00	175	0838	3.8	0321	C 000	B4
47289058	47WAC3365	3	004668912	3	09 05 63	02 05 69	07 00 00	129	0559	3.6	0199	C 150	S1 D1
47289075													
47289075	006633672	3	001473511	3	02 03 66	08 31 68	00 00 00	291	0896	4.8	0434	0 125	F5
47289075	006633672	3	001473511	3	02 03 66	05 12 68	00 00 00	099	0442	3.3	0144	B 103	F5
47289097													

DHIA - 1060 (2-88)

DELETE A SINGLE LACTATION, record actual calving date  
DELETE ALL RECORDS, record 9999999

**CALVING CONTROL DATE (Cols. 38 - 43)**  
**DELETE A SINGLE LACTATION, record a**  
**DELETE ALL RECORDS, record 999999**

(Over)

**INSTRUCTIONS FOR AH FORM 59 - RECORD DELETION FORMAT (Card)**  
**(For Deleting One Lactation Record or All Records for a Cow from USDA Master Files)**

**IF PUNCHED CARDS ARE SUBMITTED:** (1) ALL columns **NOT** designated in the following instructions **MUST** be left blank; (2) the "ID Code" in column 31 is zero "0"; (3) the "Type Code" in column 58 is "K" (11 (-) and 2 punches); and (4) the "Record Code" in column 80 is "E" (12 (+) and 5 punches).

**COMPLETE IDENTIFICATION INFORMATION MUST BE GIVEN**

CARD COLUMNS	EXPLANATION OF DATA
1	Cow's breed should be expressed in one of the following codes: Ayrshire ... 1      Holstein ... 3      Brown Swiss ... 5      Red Dane ..... 7      Red Polled ... 9 Guernsey ... 2      Jersey ... 4      M. Shorthorn ... 6      Other breeds or crossbreeds .... 8
2 - 10	Cow number (registration or eartag)
11 -	Sire's breed (Use breed codes above)
12 - 20	Sire number (registration or eartag)
21	Dam's breed (Use breed codes above)
22 - 30	Dam number (registration or eartag)
31	ID code (zero) already entered
32 - 37	Birth date (year - month - day)
38 - 43	Calving control date:
	<b>DELETE A SINGLE LACTATION</b> , record actual calving date <b>DELETE ALL RECORDS</b> , record 999999
58	Type - K (already entered)
80	Record code - E (already entered)



TABLE 1.--Relative frequency of error conditions in Official DHI lactation records submitted for edit in 1969<sup>1/</sup>

Main edit rejects-2/		Preliminary edit -by registered and grade cows	Error conditions	Error conditions in category	Percentage of total error conditions	Percentage of all records submitted	
Code		Grade		Number	Percent	Percent	
B			Sire number all zeros	802,079	91.20	42.89	
			Conflicting or questionable birth date	17,188	1.95	.92	
	A		Conflict with previous information supplied	14,920	1.70	.80	
	F		Conflicting or questionable calving date	11,045	1.26	.59	
	S		Conflicting or questionable sire number	4,699	.53	.25	
D			Conflicting or questionable dam number	4,114	.47	.22	
			Conflicting or questionable cow number	3,575	.41	.19	
	C	Registered	Cow and dam breed unequal	3,131	.36	.17	
		Regist./Grade	Blanks in any position of record	2,868	.33	.15	
		Regist./Grade	Alpha in high-order 2 positions of sire number	2,437	.28	.13	
		Registered	Dam number all zeros	2,239	.25	.12	
		Regist./Grade	Sire breed zero	2,009	.23	.11	
		Registered	Sire number all zeros	1,847	.21	.10	
		Registered	Cow and sire breed unequal	1,558	.18	.08	
		Regist./Grade	Dam breed zero	1,395	.16	.07	
J		Registered	Cow breed "eight"	642	.07	.03	
			Equal identification number for two or more of the animals in the pedigree	565	.06	.03	
		Registered	Cow number all zeros	493	.06	.03	
			Invalid State code	458	.05	.02	
		Grade	Eartag cow breed "non-eight," sire breed unequal	425	.05	.02	
		Regist./Grade	Days in milk zero	212	.02	.01	
		Registered	Cow number alphabetic	188	.02	.01	
		Grade	Eartag cow breed "eight," "non-eight" sire and dam equal	188	.02	.01	
			Invalid characters - usually blanks or alphabetics	168	.02	.01	
	I	Registered	Sire number alphabetic	164	.02	.01	
		Registered	Cow breed zero	160	.02	.01	
		Registered	Dam number alphabetic	141	.02	.01	
			Conflicting or questionable breed code	104	.01	.01	
			Conflicting or questionable milk pounds	94	.01	.01	
	E	Registered	Sire number an eartag number	79	.01	.01	
			Conflicting or questionable fat pounds	68	.01	.004	
			Conflicting or questionable percent fat	62	.01	.003	
	O	Regist./Grade	Alpha in high-order 2 positions of dam number	57	.01	.003	
	P	Registered	Alpha in high-order 2 positions of cow number	53	.01	.003	
			Conflicting or questionable days in milk	7	.001	.0004	
N		Registered	Alpha "J" through "Z" in "Termination" code	7	.001	.0004	
		Regist./Grade	Blank days in milk	3	.0003	.0002	
		Registered	Blank cow breed	1	.0001	.0001	
	Total error conditions				879,443	100.00	47.02

<sup>1/</sup> Total lactation records submitted = 1,870,276; total lactation records rejected = 869,904; percentage lost = 46.5.  
<sup>2/</sup> Conditions using this code were discovered in the main edit and were recorded on the error tapes returned to the processing centers. All others were discovered in the preliminary edit.

TABLE 2.--Relative frequency of error conditions in Official DHI lactation records submitted for edit in May 1970<sup>1/</sup>

Main edit rejects <sup>2/</sup>	Preliminary edit -by registered and grade cows	Error conditions	Error conditions in category	Percentage of total error conditions	Percentage of all records submitted
Code			Number	Percent	Percent
B	Grade	Sire number all zeros	244,934	92.33	41.57
A		Conflicting or questionable birth date	5,562	2.10	.94
F		Conflict with previous information supplied	4,301	1.62	.73
S		Conflicting or questionable calving date	2,254	.85	.38
D		Conflicting or questionable sire number	1,263	.48	.21
C		Conflicting or questionable dam number	1,128	.43	.19
		Conflicting or questionable cow number	780	.29	.13
	Regist./Grade	Sire breed zero	738	.28	.13
	Registered	Dam number all zeros	659	.25	.11
	Registered	Cow and dam breed unequal	635	.24	.11
	Registered	Cow and sire breed unequal	557	.21	.09
	Registered	Sire number all zeros	476	.18	.08
	Regist./Grade	Dam breed zero	344	.13	.06
I		Invalid characters - usually blanks or alphabetics	237	.09	.04
	Registered	Cow breed "eight"	185	.07	.03
J	Regist./Grade	Blanks in any position of record	182	.07	.03
		Equal identification number for two or more of the animals in the pedigree	166	.06	.03
	Grade	Eartag cow breed "non-eight," sire breed unequal	153	.06	.03
	Registered	Cow number all zeros	134	.05	.02
	Grade	Eartag cow breed "eight," "non-eight" sire and dam equal	74	.03	.01
	Registered	Cow number alphabetics	73	.03	.01
	Regist./Grade	Alpha in high-order 2 positions of sire number	56	.02	.01
	Registered	Cow breed zero	50	.02	.01
	Registered	Sire number alphabetics	45	.02	.01
	Registered	Dam number alphabetics	44	.02	.01
G	Regist./Grade	Alpha in high-order 2 positions of dam number	42	.02	.01
		Invalid State code	32	.01	.01
M		Conflicting or questionable milk pounds	32	.01	.01
E		Conflicting or questionable breed code	25	.01	.004
O		Conflicting or questionable fat pounds	25	.01	.004
		Days in milk zero	24	.01	.004
	Regist./Grade	Sire number an eartag number	21	.01	.004
	Registered	Alpha in high-order 2 positions of cow number	17	.01	.003
P	Regist./Grade	Conflicting or questionable percent fat	15	.01	.003
N		Conflicting or questionable days in milk	4	.002	.001
	Regist./Grade	Alpha "J" through "Z" in "termination" code	1	.0004	.0002
	Registered	Blank days in milk	1	.0004	.0002
Total error conditions			265,269	100.00	45.02

<sup>1/</sup> Total lactation records submitted = 589,277; total lactation records rejected = 263,156; percentage lost = 44.7.<sup>2/</sup> Conditions using this code were discovered in the main edit and were recorded on the error tapes returned to the processing centers. All others were discovered in the preliminary edit.